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CURRENT SUPPORT BRIEF

THE ERA: A NEW SOVIET ELECTRONIC COMPUTER

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THE ERA: A NEW SOVIET ELECTRONIC COMPUTER

The USSR is scheduling initial series production of a new high-speed electronic digital computer, designated the ERA, for 1961. This is the first effort by the Soviet Union to carry into production a high-speed digital computer designed primarily for the processing and analysis of economic data. Up to the present, very few computers have been made available in the USSR for anything other than the highest priority military, scientific, and engineering activities. Within the Soviet context, therefore, the scheduling of an economic data handling computer for industrial-scale production reflects the development of a broader, more flexible production base within the computer industry of the USSR. Within the international context, however, the design of the ERA reflects a technology which is already obsolete in the US and other Free World countries, and the total number of ERA computers to be produced from 1961-65 represents only a fractional share of one year's current output of business data handling computers in the US.

As recently as mid-1959, such comments as the following were appearing regularly in the Soviet press:

> ...On the whole, very few high-capacity machines for economic calculations are in operation.
>
> ...While high-speed computers are used on a large scale for economic operations in the US, such work is still in the research stage in the USSR. It is connected with the use of existing computers, such as the Ural, Strela, and M-3, for economic calculations. .../Such/ existing general-purpose mathematical machines have been proved not very suitable for economic calculations. 1/

In December 1960, the first operational ERA computer was being installed and checked out at the Likhachev Automobile Plant in Moscow, a "showcase" enterprise frequently exhibited to foreign visitors. The building of five ERA units is scheduled for 1961 and Soviet plans call for a cumulative total output of 200 units by the end of the Seven-Year Plan in 1965. 2/ In the US, IBM alone was building its 704- and 705-series computers at the rate of almost one a day until these machines were phased out during autumn 1959 in favor of transistorized models. According to present plans, virtually all of the ERA computers will be allocated to regional computing centers and industrial enterprises where they are to be used for the automation of economic data handling. 3/

The unit price of the ERA computer reportedly will range between 2 and 3 million (old) rubles on a series-production basis. 4/ Preliminary evaluation of the ERA by US computer industry specialists indicates that the factory price of a comparable computer produced in the US would range from $300,000 to $350,000.

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Intrinsic to the design of an economic data processing computer, and incorporated for the first time by Soviet designers into the ERA, is the ability of the machine to handle both numerical and alphabetical inputs. While such alphanumeric computers have been widely utilized in the US and other Western countries for a number of years, all identified production-line Soviet computers other than the ERA have been limited in their design to the handling of numerical data only.

The capacity of the ERA's internal matrix memory (4,096 six-bit words) and external magnetic tape memory (five storages, each of 500 meters length) must be rated as very small in comparison with the memories currently available for business data handling machines produced in the West. Similarly, the 300-lines-a-minute speed of the printer used for read-out on the ERA is considerably slower than the speeds achieved by US printers on the market several years ago. At least as early as 1957, for example, alphanumeric read-out printers manufactured by UNIVAC, Analex, and Shepard of the US were operating at speeds of from 600 to 900 lines per minute. 5/

Finally, it is of considerable interest that the ERA is not a transistorized computer. Although its design provides for a substantial degree of miniaturization through the use of a large number of solid state devices such as germanium diodes and ferrite cores, the other active components of the ERA consist of 3,500 vacuum tubes instead of transistors. In the West and in Japan, design and production of computers based on vacuum tube technology has been discontinued owing to the abundant availability of transistors which, for many computer functions, are superior to vacuum tubes in terms of miniature size, reliability, service life, low power consumption, and low heat generation. Implicit in the decision to initiate in 1961 large-scale production of another vacuum tube computer is a strong indication that the USSR is still confronted by problems in transistor production which were overcome by the West at least several years ago.

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